

Library Management (M.Tech Software Engineering /2022mt93331)

Version Number	Date	Author/Owner	Description of Change
01	01-August-2023	SHELKE AKSHAY NANDKUMAR	Problem statement, Requirements Definition, Features identification, Project plan etc.
02	02-August-2023	SHELKE AKSHAY NANDKUMAR	Project features and project plan updated
03	20-August-2023	SHELKE AKSHAY NANDKUMAR	Conceptual Design Phase details updated
04	05-Sept-2023	SHELKE AKSHAY NANDKUMAR	Logical Design Phase details updated
05	19-Oct-2023	SHELKE AKSHAY NANDKUMAR	Physical Design Phase details updated
06	26-Oct-2023	SHELKE AKSHAY NANDKUMAR	Demo recording, documentation, reports, and final doc details updated

I. REQUIREMENT SPECIFICATION

1. Problem Statement & Requirements Definition

LIBRARY MANAGEMENT SYSTEM:

The *Library Management System (LMS)* aims to streamline and automate the operations of a library, addressing various challenges faced in traditional manual systems. The key problem with manual library management is inefficiency and inaccuracies in tasks such as book borrowing, returning, cataloguing, and tracking book availability. These processes can be time-consuming, error-prone, and lack real-time insights into the library's inventory and usage patterns.

The *primary goal of the LMS* is to provide a centralized and user-friendly platform for both librarians and library members to manage library resources efficiently. The system should allow librarians to update, organize, and monitor the library collection, including books, magazines, journals, and other materials. Additionally, library members should be able to search for available resources, place holds, borrow, renew, and return items with ease.

The LMS should include features for generating reports, managing user accounts, tracking overdue items, and handling fine payments. Data security and privacy are also crucial aspects to be considered, ensuring that sensitive information is protected and accessible only to authorized personnel.

To help organize a library, we have decided to create a database. It would be ideal for a library upgrading from a card or paper system where they have a card for each piece of media and for each customer or patron. It would also benefit a library where all employee records are still on a paper basis as well including all hire paperwork and payroll information such as salary. As you can imagine for a paper system, it makes figuring out how many books are overdue, or how many people owe fees, take quite a while to figure out for the employees. Patrons also have no control over the system.

To replace the current card and paper system, we will use this database and it is its main purpose. All tasks previously recorded on paper or cards will be integrated into the new system. For example, based on due dates, librarians can run reports to see who has late books (checked out media report), who owes fees for late books or damaged books (cost report) and much more. It will only take a few seconds to run the report as opposed to going through all the cards by hand, saving the librarians hours a week.

Roles and Responsibilities of Personas:

a) Librarian: The librarian is responsible for managing the library system, maintaining the database, adding new books, handling user accounts, processing book requests, generating reports, and ensuring the smooth functioning of the LMS.

b) Library Staff: The library staff assists the librarian in day-to-day operations, including book shelving, managing returned books, handling book reservations, assisting users with queries, and maintaining a clean and organized library environment.

c) Library Users (Patrons): The users have access to the LMS and can search for books, check availability, borrow, renew, and reserve books. They can also pay fines for overdue books and provide feedback on their library experience.

The **Library Management System** is expected to meet following **key business requirements**:

a) User Authentication:

- Secure login and registration for librarians and library users.
- Role-based access control to restrict actions based on user roles.

b) Book Management:

- Add, update, delete book records with details like title, author, ISBN, & category.
- Track book availability and location within the library.

c) Borrowing and Returns:

- Allow users to borrow and return books with due date tracking.
- Automatically calculate and impose fines for late returns.

d) Book Search:

- Provide an advanced search interface with various filters.

e) Reservation System:

- Allow users to reserve books that are currently unavailable.

f) Reporting and Analytics:

- Generate reports on book circulation, popular titles, and user activity.
- Provide statistics on overdue books and fines collected.

g) Online Payments:

- Enable online fine payment and keep a record of transactions.

h) Notifications:

- Send automated email reminders for overdue books and reservation pickups.

2. Project features identified:

Feature ID	Feature name	Description
F01	User Management	This feature allows librarians to manage user accounts, issue library cards, and handle user-related tasks.
F02	Book Cataloging	Librarians can add, update, and delete book records with detailed information like title, author, ISBN, etc.
F03	Borrowing and Returns	Users can borrow and return books, while the system automatically calculates and imposes fines for late returns.
F04	Online Book Search	Users can search for books using various filters like title, author, and category.
F05	Reservation System	Users can reserve books that are currently unavailable and get notified when the books become available.
F06	Reporting and Analytics	The system generates reports and statistics for administrators to analyze library usage and book circulation.
F07	Online Payments	Users can pay fines online securely through the application.
F08	Notifications	Automated email reminders are sent to users for overdue books and reservation pickups.

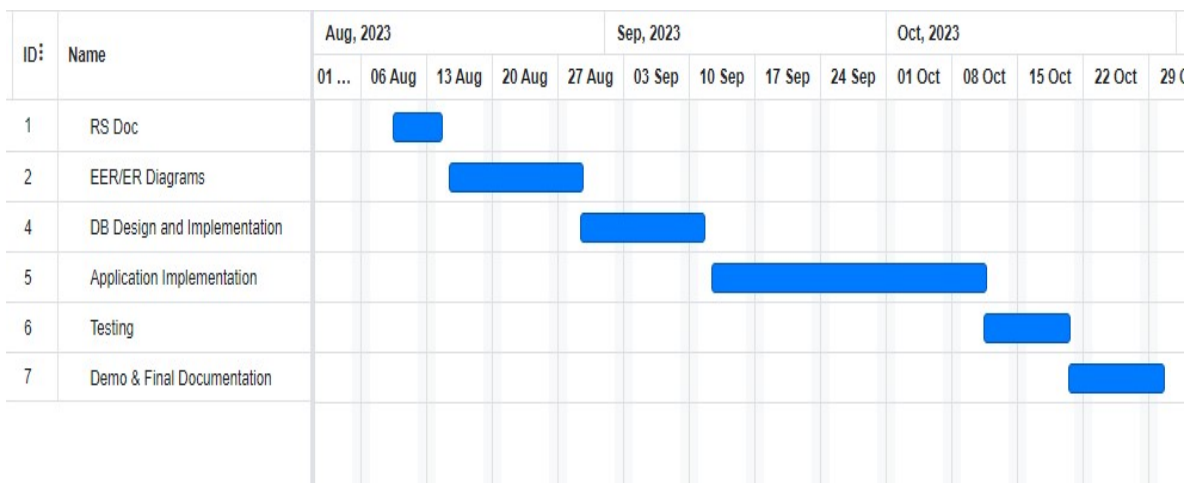
3. Software and hardware details

Platform	Windows
Frontend/console	JavaScript, Ajax, HTML5, CSS3
Backend/server	PHP (WAMP Server)
Database	MySQL
Programming Language : Frontend	JavaScript, HTML, CSS
Backend/server: programming Language	PHP (WAMP Server)

4. Project Plan:

The project plan will involve the following stages:

- Requirement Specification Document:** Gather detailed requirements from stakeholders and document them.
- EER/ER diagrams:** Design Entity-relationship diagrams as part of conceptual design phase.
- DB Design and Implementation:** Create the database schema, Database Normalization, table/data creation.
- Application Implementation:** Implement the application using the chosen technology stack. Design User Interfaces, coding of each feature, system architecture etc. Frontend, backend, and database connectivity related implementation.
- Testing:** Conduct thorough testing, including unit testing, integration testing, and user acceptance testing, database testing etc.
- Demo & Final Documentation:** Gather all project functional statistics and record a demo video. With this information, create and submit final documentation.

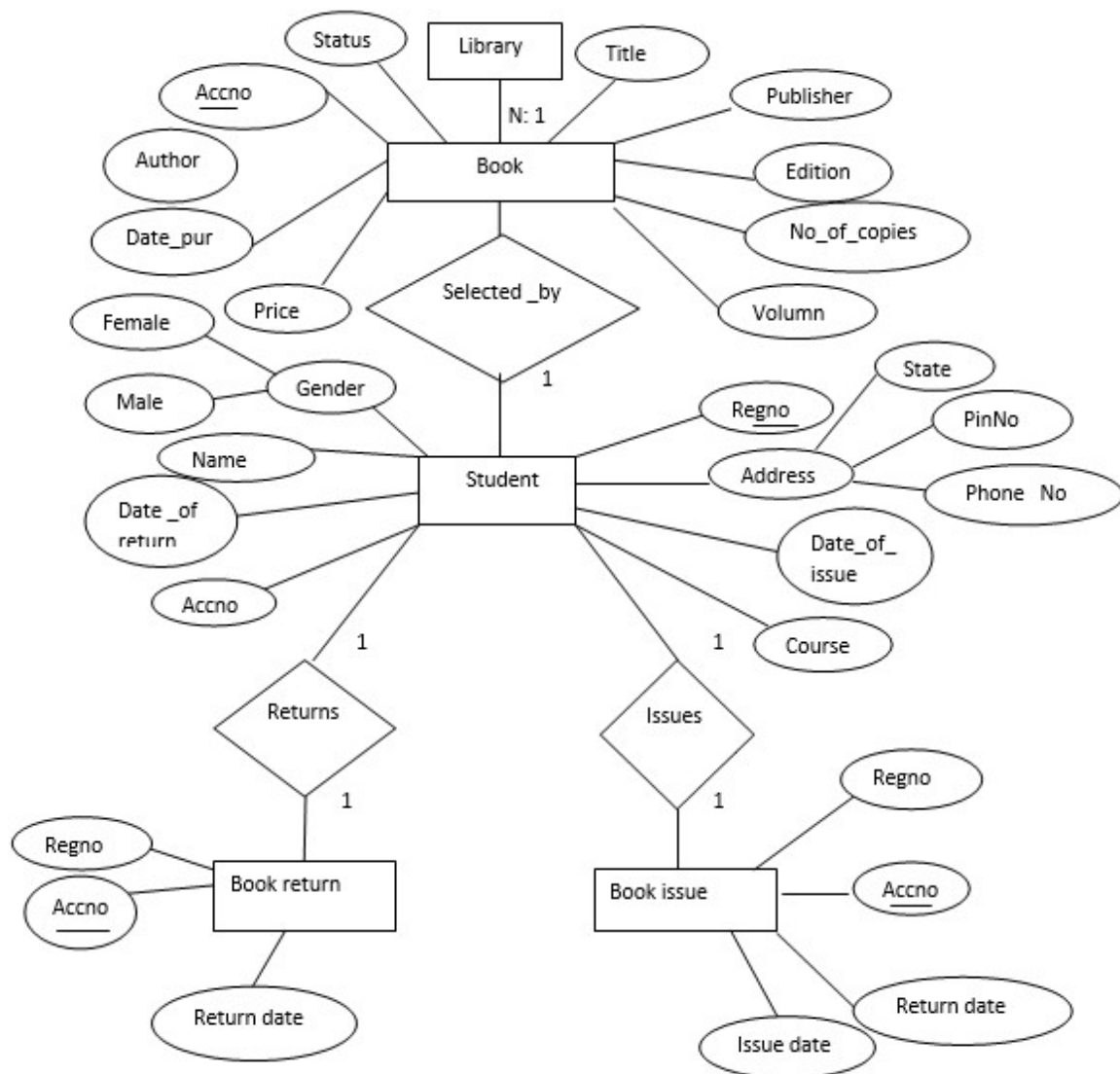


5. Google Drive Link for all deliverables:

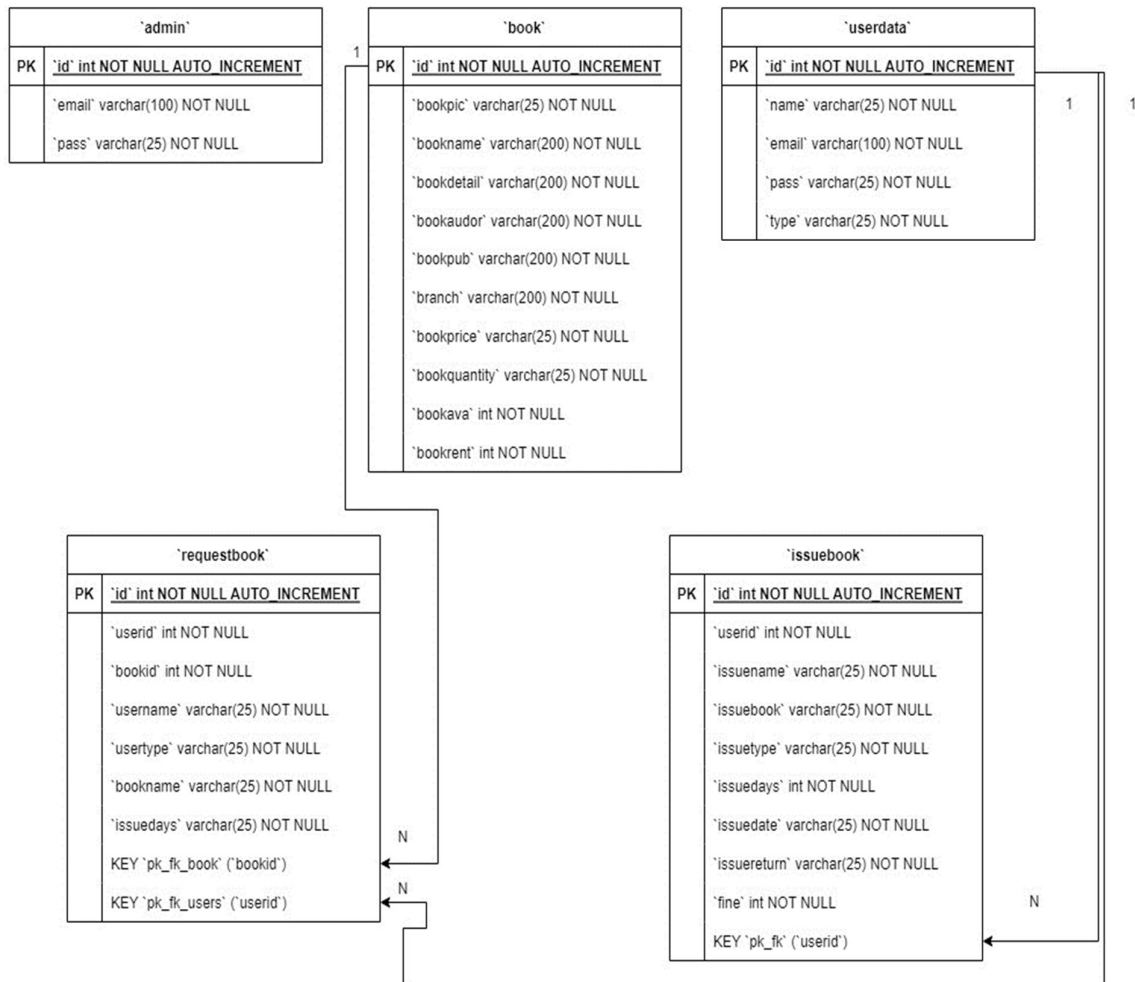
https://drive.google.com/drive/folders/14Y7oAMRhSacKphy7nwhFUXvYe_okZsAv?usp=drive_link

II. CONCEPTUAL DESIGN:

a. Entity Relationship Model



b. Object Model Diagram:

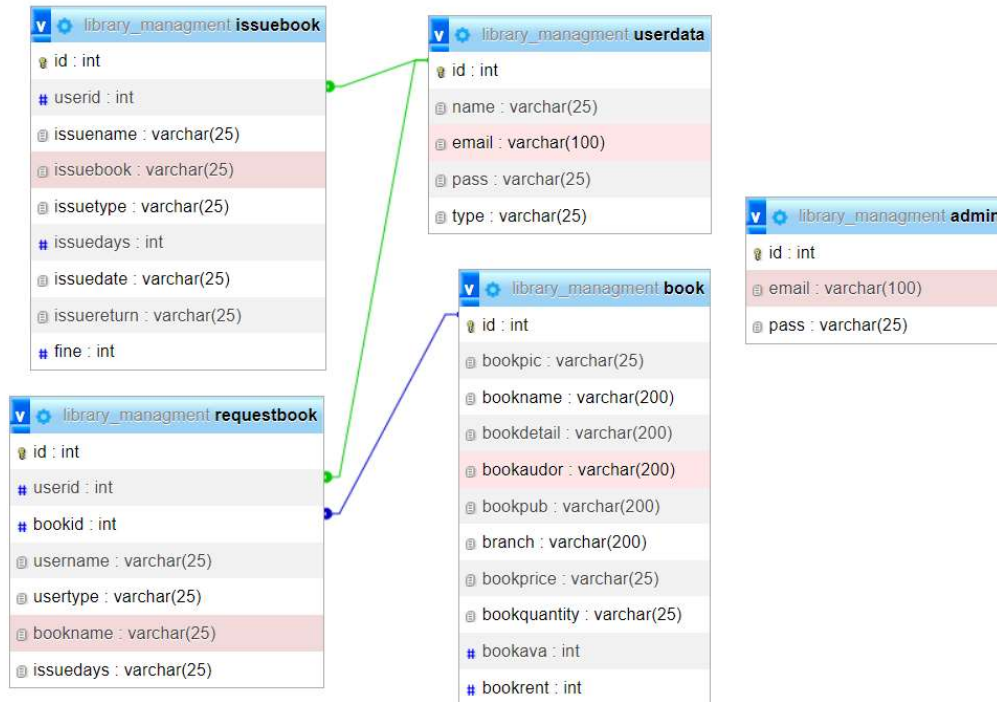


c. Google Drive Link for all Deliverables:

https://drive.google.com/drive/folders/14Y7oAMRhSackphy7nwhFUXvYe_okZsAv?usp=drive_link

III. LOGICAL DESIGN

a. Relational Database Schema



b. Normalization

Database Name : library_management

#	Table Name	State	Reason
1	issuebook	3NF	No multivalued attributes, No partial dependencies, No transitive dependency
2	requestbook	3NF	No multivalued attributes, No partial dependencies, No transitive dependency
3	userdata	3NF	No multivalued attributes, No partial dependencies, No transitive dependency
4	book	3NF	No multivalued attributes, No partial dependencies, No transitive dependency
5	admin	3NF	No multivalued attributes, No partial dependencies, No transitive dependency

c. Create Data Dictionary

Table Definitions and Data Contents :

1. admin table

library_management	admin
id	int
email	varchar(100)
pass	varchar(25)

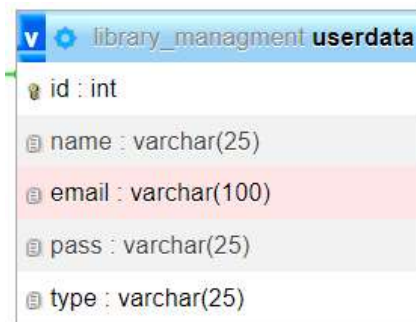
id	email	pass
1	admin@gmail.com	123

2. book table

library_management	book
id	int
bookpic	varchar(25)
bookname	varchar(200)
bookdetail	varchar(200)
bookaudor	varchar(200)
bookpub	varchar(200)
branch	varchar(200)
bookprice	varchar(25)
bookquantity	varchar(25)
bookava	int
bookrent	int

id	bookpic	bookname	bookdetail	bookaudor	bookpub	branch	bookprice	bookquantity	bookava	bookrent
1	1.jpg	Fundamentals of Database System	7th edition, 2017	Ramez Elamsri and Shamkant Navathe	Pearson Education	IT	490	100	100	0
2	2.jpg	Database System Concepts	6th edition, 2013	Abraham Silberschatz and Henry F Korth and S Sudar...	McGraw Hill	IT	264	100	100	0
3	3.jpg	An Introduction to Database Systems	8th edition, 2006	Christopher J. Date	Addison Wesley	IT	579	100	100	0

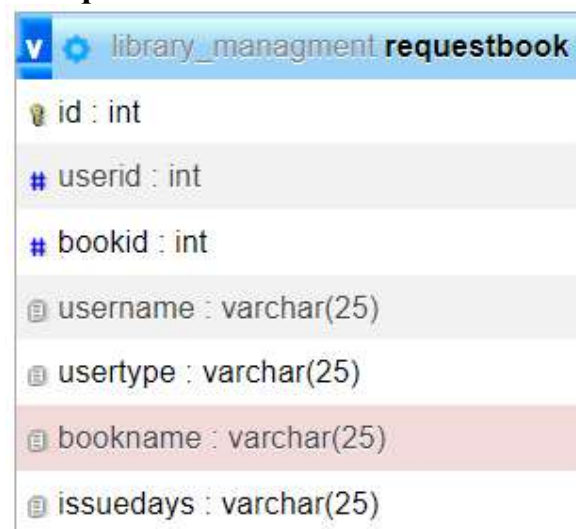
3. userdata table



library_managment	userdata
id	int
name	varchar(25)
email	varchar(100)
pass	varchar(25)
type	varchar(25)

id	name	email	pass	type
1	akshay_shelke	2022mt93331@wilp.bits-pilani.ac.in	123	student
2	john_doe	johndoe@gmail.com	123	student

4. requestbook table



library_managment	requestbook
id	int
userid	int
bookid	int
username	varchar(25)
usertype	varchar(25)
bookname	varchar(25)
issuedays	varchar(25)

id	userid	bookid	username	usertype	bookname	issuedays
7	1	1	akshay_shelke	student	Fundamentals of Database System	7
8	1	3	akshay_shelke	student	An Introduction to Database Systems	7

5. issuebook table

library_managment issuebook	
🔑	id : int
#	userid : int
📄	issuename : varchar(25)
📄	issuebook : varchar(25)
📄	issuetype : varchar(25)
#	issuedays : int
📄	issuedate : varchar(25)
📄	issuereturn : varchar(25)
#	fine : int

id	userid	issuename	issuebook	issuetype	issuedays	issuedate	issuereturn	fine
12	1	akshay_shelke	Fundamentals of Database System	student	7	27/10/2023	03/11/2023	0
13	1	akshay_shelke	An Introduction to Database Systems	student	7	27/10/2023	03/11/2023	0

d. Google Drive Link for all Deliverables:

https://drive.google.com/drive/folders/14Y7oAMRhSacKphy7nwhFUXvYe_okZsAv?usp=drive_link

IV. PHYSICAL DESIGN

a. SQL Statements Database Schema

```
SET SQL_MODE = "NO_AUTO_VALUE_ON_ZERO";
START TRANSACTION;
SET time_zone = "+00:00";

--
-- Database: `library_managment`
--

--
-- Table structure for table `admin`
--

CREATE TABLE `admin` (
  `id` int(11) NOT NULL,
  `email` varchar(500) NOT NULL,
  `pass` varchar(500) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;

--
-- Dumping data for table `admin`
--

INSERT INTO `admin` (`id`, `email`, `pass`) VALUES
(1, 'admin@gmail.com', '123');
```

```

--
-- Table structure for table `book`
--

CREATE TABLE `book` (
  `id` int(11) NOT NULL,
  `bookpic` varchar(500) NOT NULL,
  `bookname` varchar(500) NOT NULL,
  `bookdetail` varchar(500) NOT NULL,
  `bookaudor` varchar(500) NOT NULL,
  `bookpub` varchar(500) NOT NULL,
  `branch` varchar(500) NOT NULL,
  `bookprice` varchar(500) NOT NULL,
  `bookquantity` varchar(500) NOT NULL,
  `bookava` int(11) NOT NULL,
  `bookrent` int(11) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;

--
-- Dumping data for table `book`
--

INSERT INTO `book` (`id`, `bookpic`, `bookname`, `bookdetail`,
`bookaudor`, `bookpub`, `branch`, `bookprice`, `bookquantity`,
`bookava`, `bookrent`) VALUES
(1, '1.jpg', 'Fundamentals of Database System', '7th edition, 2017',
'Ramez Elamsri and Shamkant Navathe', 'Pearson Education', 'IT',
'490', '100', 100, 0),
(2, '2.jpg', 'Database System Concepts', '6th edition, 2013', 'Abraham
Silberschatz and Henry F Korth and S Sudarshan', 'McGraw Hill', 'IT',
'264', '100', 100, 0),
(3, '3.jpg', 'An Introduction to Database Systems', '8th edition, 2006',
'Christopher J. Date', 'Addison Wesley', 'IT', '579', '100', 100, 0);

```

```
--  
-- Table structure for table `issuebook`  
--  
  
CREATE TABLE `issuebook` (  
  `id` int(11) NOT NULL,  
  `userid` int(11) NOT NULL,  
  `issuename` varchar(500) NOT NULL,  
  `issuebook` varchar(500) NOT NULL,  
  `issuetype` varchar(500) NOT NULL,  
  `issuedays` int(11) NOT NULL,  
  `issuedate` varchar(500) NOT NULL,  
  `issuereturn` varchar(500) NOT NULL,  
  `fine` int(11) NOT NULL  
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;
```

```
--  
-- Dumping data for table `issuebook`  
--
```

```
-- -----
```

```
--  
-- Table structure for table `requestbook`  
--
```

```
CREATE TABLE `requestbook` (  
  `id` int(11) NOT NULL,  
  `userid` int(11) NOT NULL,  
  `bookid` int(11) NOT NULL,  
  `username` varchar(500) NOT NULL,  
  `usertype` varchar(500) NOT NULL,  
  `bookname` varchar(500) NOT NULL,  
  `issuedays` varchar(500) NOT NULL  
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;
```

```
-- -----
```

```

--
-- Table structure for table `userdata`
--

CREATE TABLE `userdata` (
  `id` int(11) NOT NULL,
  `name` varchar(500) NOT NULL,
  `email` varchar(100) NOT NULL,
  `pass` varchar(500) NOT NULL,
  `type` varchar(500) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4;

--
-- Dumping data for table `userdata`
--

INSERT INTO `userdata` (`id`, `name`, `email`, `pass`, `type`) VALUES
(1, 'akshay_shelke', '2022mt93331@wilp.bits-pilani.ac.in', '123',
'student'),
(2, 'john_doe', 'johndoe@gmail.com', '123', 'student');

--
-- Indexes for dumped tables
--

--
-- Indexes for table `admin`
--
ALTER TABLE `admin`
  ADD PRIMARY KEY (`id`);

--
-- Indexes for table `book`
--
ALTER TABLE `book`
  ADD PRIMARY KEY (`id`);

--
-- Indexes for table `issuebook`
--

```

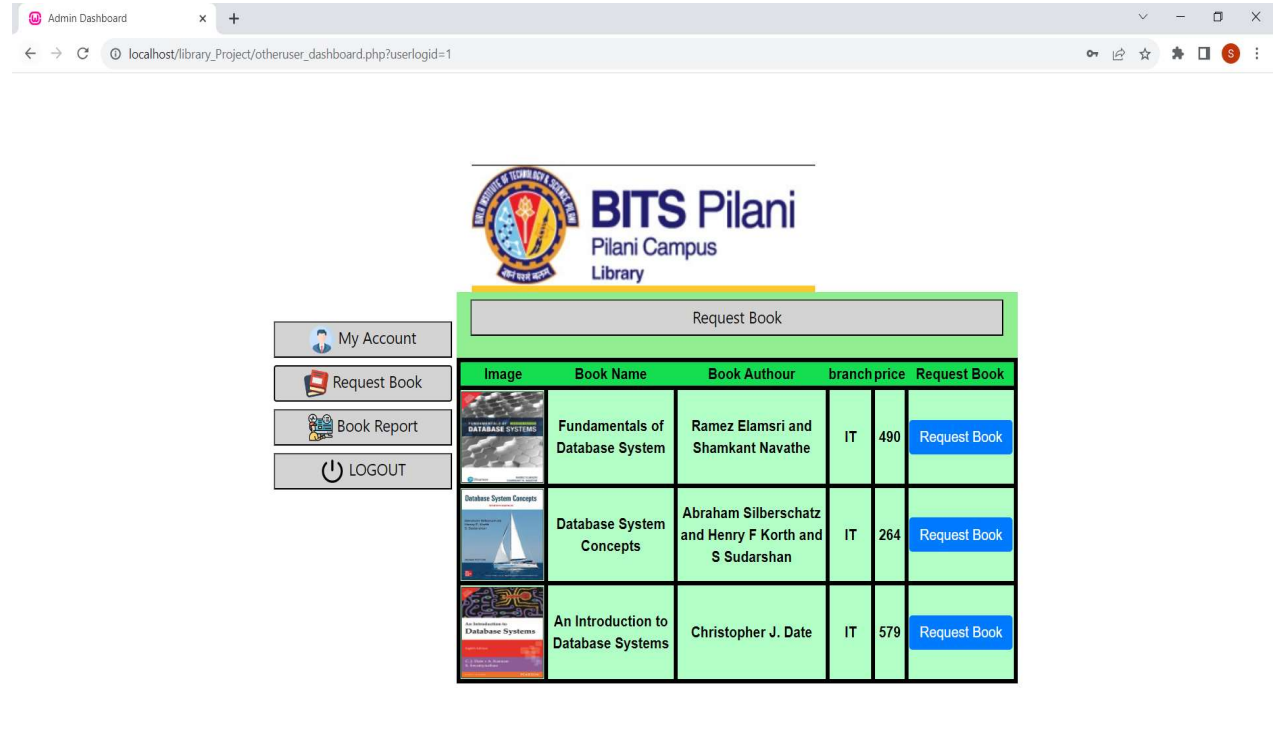
```
ALTER TABLE `issuebook`  
  ADD PRIMARY KEY (`id`),  
  ADD KEY `pk_fk` (`userid`);  
  
--  
-- Indexes for table `requestbook`  
--  
ALTER TABLE `requestbook`  
  ADD PRIMARY KEY (`id`),  
  ADD KEY `pk_fk_book` (`bookid`),  
  ADD KEY `pk_fk_users` (`userid`);  
  
--  
-- Indexes for table `userdata`  
--  
ALTER TABLE `userdata`  
  ADD PRIMARY KEY (`id`);  
  
--  
-- AUTO_INCREMENT for dumped tables  
--  
  
--  
-- AUTO_INCREMENT for table `admin`  
--  
ALTER TABLE `admin`  
  MODIFY `id` int(11) NOT NULL AUTO_INCREMENT,  
  AUTO_INCREMENT=2;  
  
--  
-- AUTO_INCREMENT for table `book`  
--  
ALTER TABLE `book`  
  MODIFY `id` int(11) NOT NULL AUTO_INCREMENT,  
  AUTO_INCREMENT=7;  
  
--  
-- AUTO_INCREMENT for table `issuebook`  
--  
ALTER TABLE `issuebook`  
  MODIFY `id` int(11) NOT NULL AUTO_INCREMENT,  
  AUTO_INCREMENT=12;
```

```
--  
-- AUTO_INCREMENT for table `requestbook`  
--  
ALTER TABLE `requestbook`  
  MODIFY `id` int(11) NOT NULL AUTO_INCREMENT,  
  AUTO_INCREMENT=7;  
  
--  
-- AUTO_INCREMENT for table `userdata`  
--  
ALTER TABLE `userdata`  
  MODIFY `id` int(11) NOT NULL AUTO_INCREMENT,  
  AUTO_INCREMENT=6;  
  
--  
-- Constraints for dumped tables  
--  
  
--  
-- Constraints for table `issuebook`  
--  
ALTER TABLE `issuebook`  
  ADD CONSTRAINT `pk_fk` FOREIGN KEY (`userid`)  
  REFERENCES `userdata` (`id`);  
  
--  
-- Constraints for table `requestbook`  
--  
ALTER TABLE `requestbook`  
  ADD CONSTRAINT `pk_fk_users` FOREIGN KEY (`userid`)  
  REFERENCES `userdata` (`id`);  
COMMIT;  
  
ALTER TABLE `requestbook`  
  ADD CONSTRAINT `pk_fk_book` FOREIGN KEY (`bookid`)  
  REFERENCES `book` (`id`);  
COMMIT;
```


b. Stored Procedures/ Triggers/indexes
- Please refer above SQL Statements

c. User Interface and Database connectivity

Screen #1





Admin Dashboard

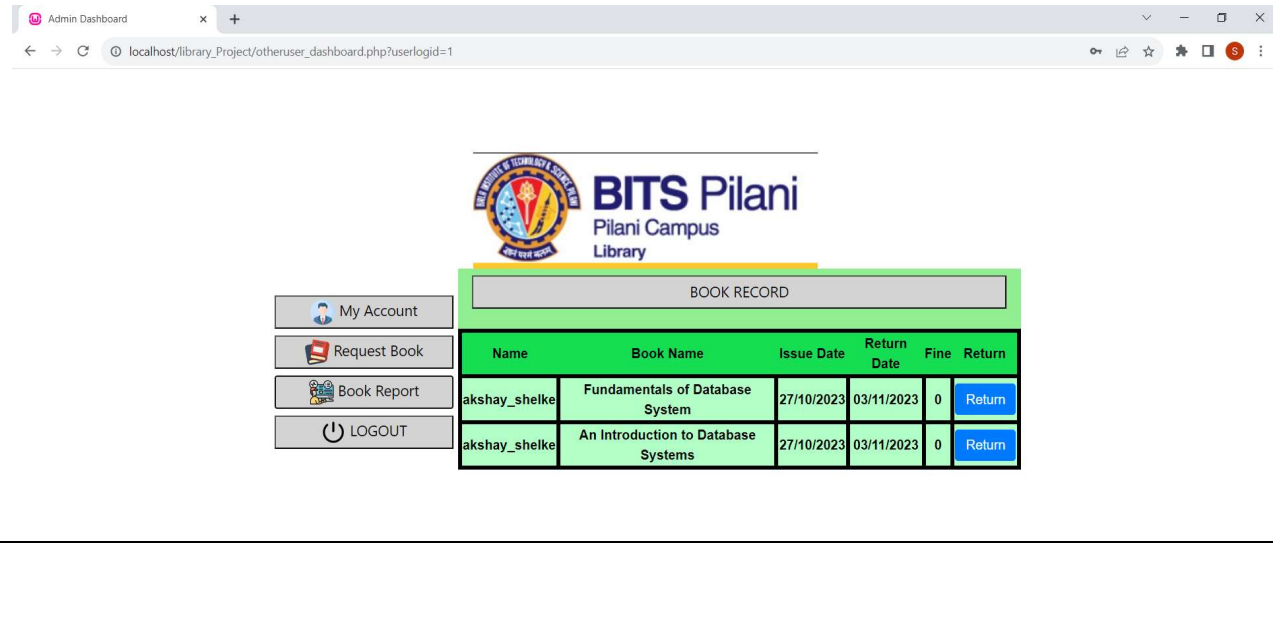
localhost/library_Project/otheruser_dashboard.php?userid=1

BITS Pilani
Pilani Campus
Library

Request Book

Image	Book Name	Book Authour	branch	price	Request Book
	Fundamentals of Database System	Ramez Elamsri and Shamkant Navathe	IT	490	Request Book
	Database System Concepts	Abraham Silberschatz and Henry F Korth and S Sudarshan	IT	264	Request Book
	An Introduction to Database Systems	Christopher J. Date	IT	579	Request Book

Screen #2



Admin Dashboard

localhost/library_Project/otheruser_dashboard.php?userid=1

BITS Pilani
Pilani Campus
Library


BOOK RECORD

Name	Book Name	Issue Date	Return Date	Fine	Return
akshay_shelke	Fundamentals of Database System	27/10/2023	03/11/2023	0	Return
akshay_shelke	An Introduction to Database Systems	27/10/2023	03/11/2023	0	Return

Screen #3

Admin Dashboard

localhost/library_Project/otheruser_dashboard.php?userid=1

**BITS Pilani**
Pilani Campus
Library

My Account

Request Book

Book Report

LOGOUT

My Account

Person Name: akshay_shelke


Person Email: 2022mt93331@wilp.bits-pilani.ac.in

Account Type: student

Screen #4

Admin Dashboard

localhost/library_Project/admin_service_dashboard.php?logid=1

**BITS Pilani**
Pilani Campus
Library

ADD BOOK

BOOK REPORT

BOOK REQUESTS

ADD STUDENT

STUDENT REPORT

ISSUE BOOK

ISSUE REPORT

LOGOUT


BOOK RECORD

Book Name	Price	Qnt	Available	Rent	View
Fundamentals of Database System	490	100	99	1	View BOOK
Database System Concepts	264	100	100	0	View BOOK
An Introduction to Database Systems	579	100	99	1	View BOOK

Screen #5

Admin Dashboard

localhost/library_Project/admin_service_dashboard.php?loginid=1



BITS Pilani
Pilani Campus
Library

ISSUE BOOK RECORD

Issue Name	Book Name	Issue Date	Return Date	Fine	Issue Type
akshay_shelke	Fundamentals of Database System	27/10/2023	03/11/2023	0	student
akshay_shelke	An Introduction to Database Systems	27/10/2023	03/11/2023	0	student

ADD BOOK

BOOK REPORT

BOOK REQUESTS

ADD STUDENT

STUDENT REPORT

ISSUE BOOK


ISSUE REPORT

LOGOUT

Screen #6

Admin Dashboard

localhost/library_Project/admin_service_dashboard.php?loginid=1



BITS Pilani
Pilani Campus
Library

STUDENT RECORD

Name	Email	Type
akshay_shelke	2022mt93331@wilp.bits-pilani.ac.in	student
john_doe	johndoe@gmail.com	student

ADD BOOK

BOOK REPORT

BOOK REQUESTS

ADD STUDENT

STUDENT REPORT

ISSUE BOOK


ISSUE REPORT

LOGOUT

Screen #7

Admin Dashboard

localhost/library_Project/admin_service_dashboard.php?viewid=1

**BITS Pilani**
Pilani Campus
Library

ADD BOOK

BOOK REPORT

BOOK REQUESTS

ADD STUDENT

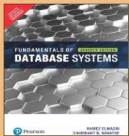
STUDENT REPORT

ISSUE BOOK

ISSUE REPORT

LOGOUT

BOOK DETAIL



Book Name: Fundamentals of Database System

Book Detail: 7th edition, 2017

Book Author: Ramez Elamsri and Shamkant Navathe

Book Publisher: Pearson Education

Book Branch: IT

Book Price: 490


Book Available: 99

Book Rent: 1

Login Screen

Login Form

localhost/library_Project/index.php

**BITS Pilani**
Pilani Campus
Library

Admin Login

Your Email *

Your Password *

Login

Student Login

Your Email *

Your Password *

Login

Database

localhost / MySQL / library_man

localhost/phpmyadmin/index.php?route=/database/structure&db=library_management

Server: MySQL 3306 Database: library_management

StructureSQLSearchQueryExportImportOperationsPrivilegesRoutinesEventsTriggersDesigner

Current server: MySQL

RecentFavorites

New

information_schema

library_management

New

admin

book

issuebook

requestbook

userdata

mysql

performance_schema

sys

Filters

Containing the word:

Table	Action	Rows	Type	Collation	Size	Overhead
<input type="checkbox"/> admin		1	InnoDB	utf8mb4_0900_ai_ci	16.0 KiB	-
<input type="checkbox"/> book		3	InnoDB	utf8mb4_0900_ai_ci	16.0 KiB	-
<input type="checkbox"/> issuebook		2	InnoDB	utf8mb4_0900_ai_ci	32.0 KiB	-
<input type="checkbox"/> requestbook		0	InnoDB	utf8mb4_0900_ai_ci	48.0 KiB	-
<input type="checkbox"/> userdata		2	InnoDB	utf8mb4_0900_ai_ci	16.0 KiB	-
5 tables	Sum	8	MyISAM	utf8mb4_0900_ai_ci	128.0 KiB	0 B

☐ Check all

With selected:

PrintData dictionary

Create new table

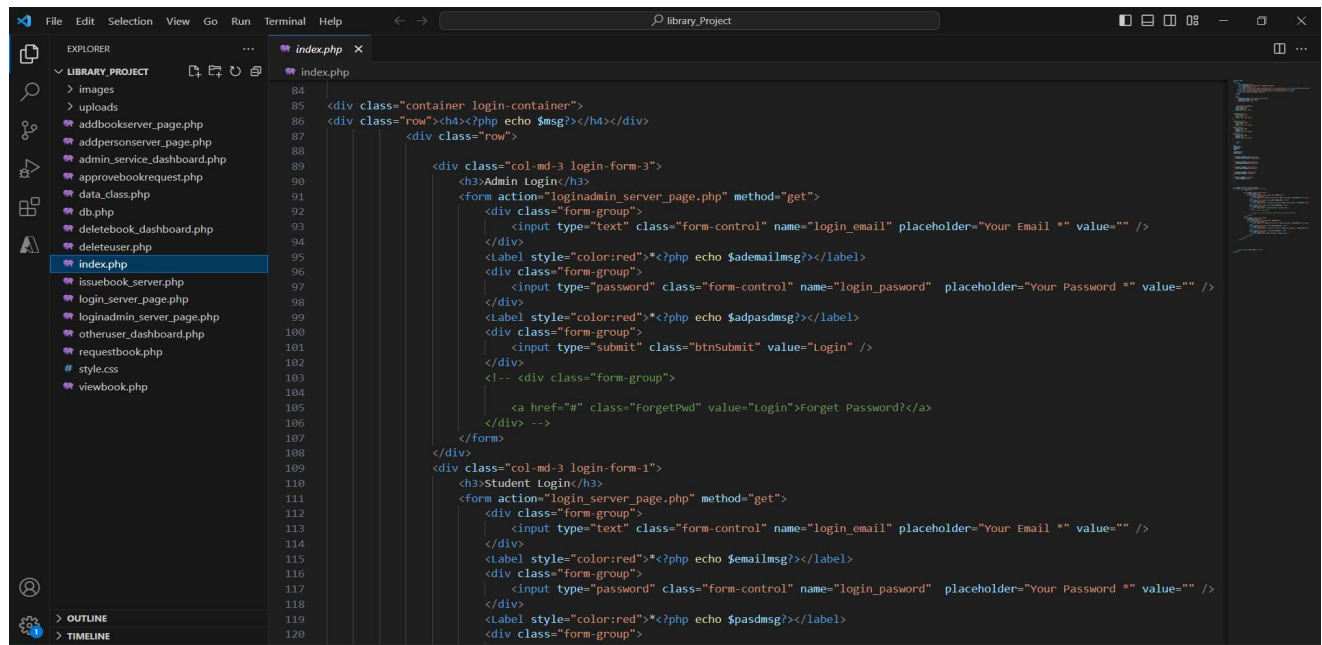
Table name

Number of columns

4

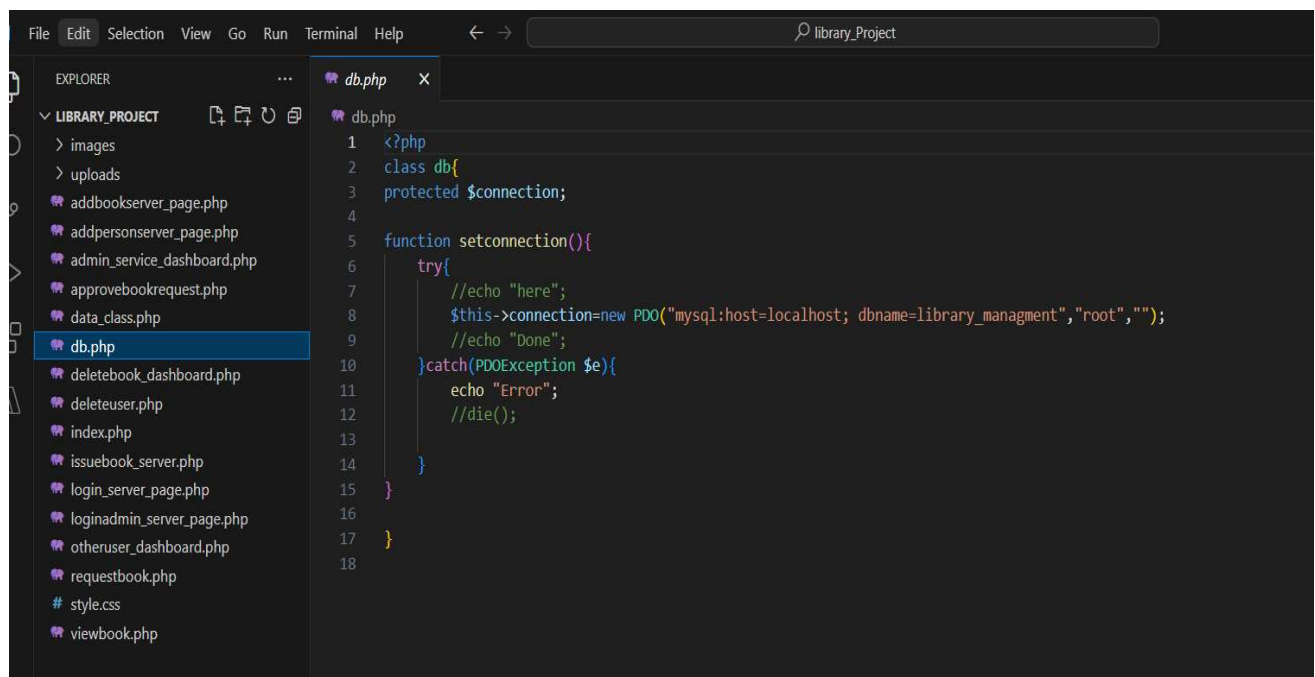
Create

Index.php



```
84
85 <div class="container login-container">
86 <div class="row"><h4><?php echo $msg?></h4></div>
87 <div class="row">
88
89 <div class="col-md-3 login-form-3">
90 <h3>Admin Login</h3>
91 <form action="loginadmin_server_page.php" method="get">
92 <div class="form-group">
93 |<input type="text" class="form-control" name="login_email" placeholder="Your Email *" value="" />
94 </div>
95 <div class="form-group">
96 |<input type="password" class="form-control" name="login_password" placeholder="Your Password *" value="" />
97 </div>
98 <label style="color:red">*<?php echo $ademailmsg?></label>
99 <div class="form-group">
100 |<input type="submit" class="btnSubmit" value="Login" />
101 </div>
102 <!-- <div class="form-group">
103 |<a href="#" class="ForgetPwd" value="Login">Forget Password?</a>
104 </div> -->
105 </form>
106 </div>
107 <div class="col-md-3 login-form-1">
108 <h3>Student Login</h3>
109 <form action="login_server_page.php" method="get">
110 <div class="form-group">
111 |<input type="text" class="form-control" name="login_email" placeholder="Your Email *" value="" />
112 </div>
113 <label style="color:red">*<?php echo $emailmsg?></label>
114 <div class="form-group">
115 |<input type="password" class="form-control" name="login_password" placeholder="Your Password *" value="" />
116 </div>
117 <label style="color:red">*<?php echo $pasdmsg?></label>
118 <div class="form-group">
119
120
```

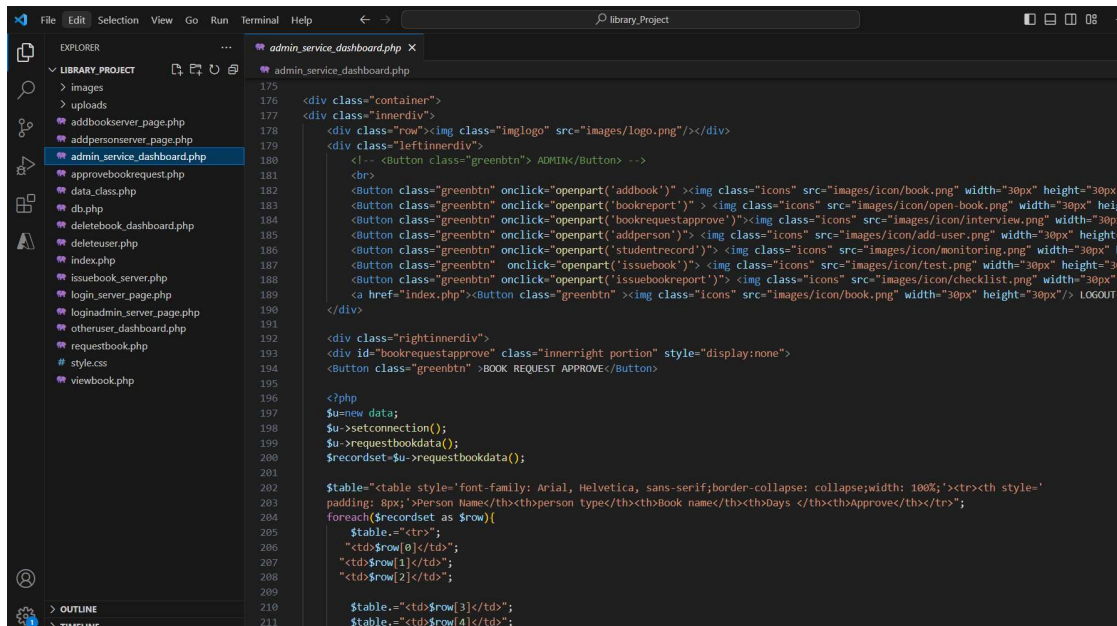
DATABASE Connection Code in php



```
1 <?php
2 class db{
3 protected $connection;
4
5 function setconnection(){
6     try{
7         //echo "here";
8         $this->connection=new PDO("mysql:host=localhost; dbname=library_managment","root","");
9         //echo "Done";
10    }catch(PDOException $e){
11        echo "Error";
12        //die();
13    }
14 }
15 }
16
17 }
18
```

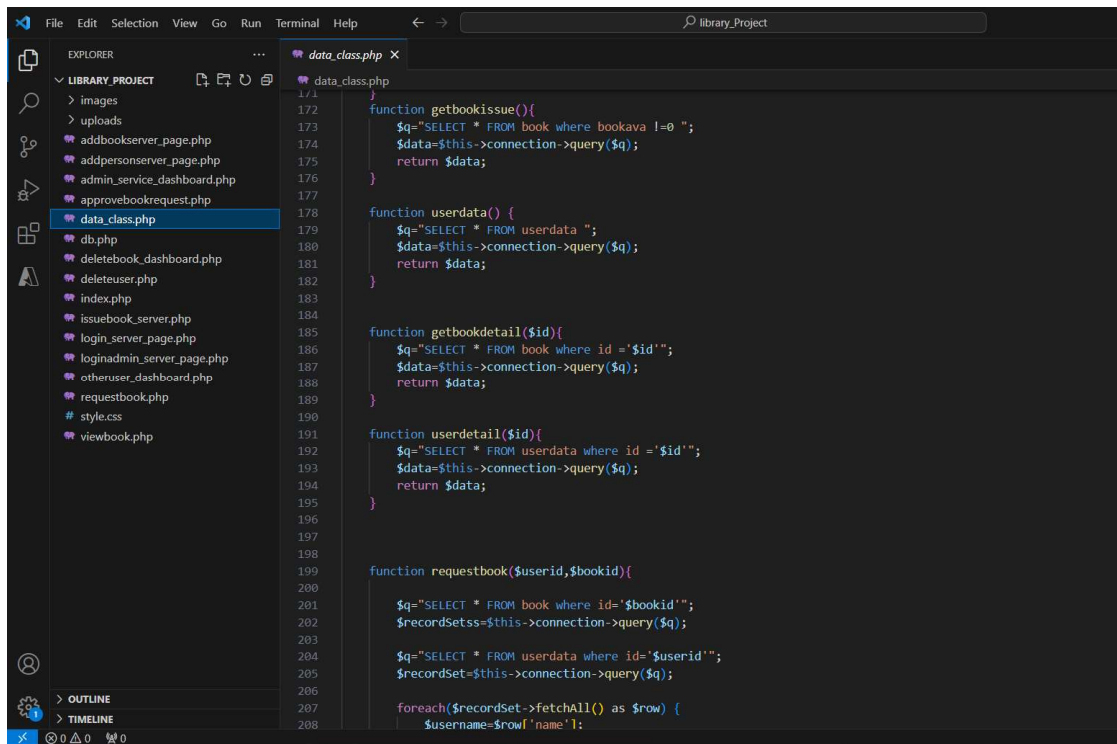

d. Front end or console based codes.

Admin Service Dashboard



```
175
176 <div class="container">
177 <div class="innerdiv">
178 <div class="row"></div>
179 <div class="leftinnerdiv">
180 <!-- <Button class="greenbtn"> ADMIN/Buttons -->
181 <br>
182 <Button class="greenbtn" onclick="openpart('addbook')"> 
183 <Button class="greenbtn" onclick="openpart('bookreport')"> 
184 <Button class="greenbtn" onclick="openpart('bookrequestapprove')"> 
185 <Button class="greenbtn" onclick="openpart('addperson')"> 
186 <Button class="greenbtn" onclick="openpart('studentrecord')"> 
187 <Button class="greenbtn" onclick="openpart('issuebook')"> 
188 <Button class="greenbtn" onclick="openpart('issuebookreport')"> 
189 <a href="index.php"><Button class="greenbtn">  LOGOUT
190 </div>
191
192 <div class="rightinnerdiv">
193 <div id="bookrequestapprove" class="innerright portion" style="display:none">
194 <Button class="greenbtn">BOOK REQUEST APPROVE</Button>
195
196 <?php
197 $u=new data;
198 $u->setconnection();
199 $u->requestbookdata();
200 $recordset=$u->requestbookdata();
201
202 $table="<table style='font-family: Arial, Helvetica, sans-serif;border-collapse: collapse;width: 100%;><tr><th style='padding: 8px;'>Person Name</th><th>person type</th><th>Book name</th><th>Days</th><th>Approve</th></tr>";
203 foreach($recordset as $row){
204     $table.="<tr>";
205     "<td>$row[0]</td>";
206     "<td>$row[1]</td>";
207     "<td>$row[2]</td>";
208     "<td>$row[3]</td>";
209     $table.="<td>$row[4]</td>";
210     $table.="</tr>";
211 }
```

Data class to interact with UI and Database



```
172
173 function getbookissue(){
174     $q="SELECT * FROM book where bookava !=0 ";
175     $data=$this->connection->query($q);
176     return $data;
177 }
178
179 function userdata() {
180     $q="SELECT * FROM userdata ";
181     $data=$this->connection->query($q);
182     return $data;
183 }
184
185 function getbookdetail($id){
186     $q="SELECT * FROM book where id ='$id'";
187     $data=$this->connection->query($q);
188     return $data;
189 }
190
191 function userdata($id){
192     $q="SELECT * FROM userdata where id ='$id'";
193     $data=$this->connection->query($q);
194     return $data;
195 }
196
197
198
199 function requestbook($userid,$bookid){
200
201     $q="SELECT * FROM book where id='$bookid'";
202     $recordSet=$this->connection->query($q);
203
204     $q="SELECT * FROM userdata where id='$userid'";
205     $recordSet=$this->connection->query($q);
206
207     foreach($recordSet->fetchAll() as $row) {
208         $username=$row['name'];
209     }
```

Request Book

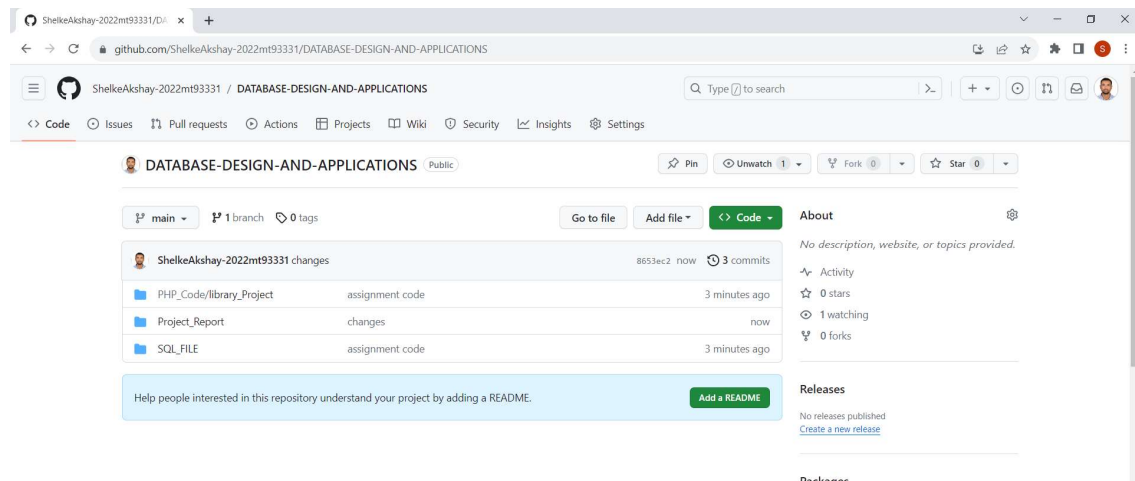
```
requestbook.php X
requestbook.php
1  <?php
2
3  include("data_class.php");
4
5  $userid=$_GET['userid'];
6  $bookid=$_GET['bookid'];
7
8
9
10
11
12  $obj=new data();
13  $obj->setconnection();
14  $obj->requestbook($userid,$bookid);
15
16  ?>
```

Approve Book Request

```
File Edit Selection View Go Run Terminal Help  library_Project
EXPLORER
LIBRARY_PROJECT
  > images
  > uploads
  addbookserver_page.php
  addpersonserver_page.php
  admin_service_dashboard.php
  approvebookrequest.php
  data_class.php
  db.php
  deletebook_dashboard.php
  deleteuser.php
  index.php
  issuebook_server.php
  login_server_page.php
  loginadmin_server_page.php
  otheruser_dashboard.php
  requestbook.php
  style.css
  viewbook.php
approvebookrequest.php X
approvebookrequest.php
1  <?php
2
3  include("data_class.php");
4
5
6
7
8  $request=$_GET['reqid'];
9  $book=$_GET['book'];
10  $userselect=$_GET['userselect'];
11  $getdate= date("d/m/Y");
12  $days= $_GET['days'];
13
14  $returnDate=Date('d/m/Y', strtotime('+'.$days.'days'));
15
16  $obj=new data();
17  $obj->setconnection();
18  $obj->issuebookapprove($book,$userselect,$days,$getdate,$returnDate,$request);
19
```


GIT Hub Link for all code files :

Link: <https://github.com/ShelkeAkshay-2022mt93331/DATABASE-DESIGN-AND-APPLICATIONS>



e. Google Drive Link for all Deliverables:

[https://drive.google.com/drive/folders/14Y7oAMRhSacKphy7nwhFUXvYe_okZsAv?usp=drive link](https://drive.google.com/drive/folders/14Y7oAMRhSacKphy7nwhFUXvYe_okZsAv?usp=drive_link)

V. FINAL DOC

a. TEST CASES for each functionality in the applications.

TEST CASES

Task Name	Test ID	Test Data	Expected Output	Actual Output	Test Pass or Fail
Admin Login	1	Valid username and password	Successful login	Successful login	Pass
	2	Invalid username or password	Error message: "Invalid credentials"	Error message: "Invalid credentials"	Pass
User Registration	3	Valid user data (name, email, password)	User successfully registered	User successfully registered	Pass
	4	Invalid user data (e.g., missing email)	Error message: "Invalid user data"	Error message: "Invalid user data"	Pass
Add Book	5	Valid book information (title, author, ISBN)	Book added successfully	Book added successfully	Pass
	6	Invalid book information (e.g., missing title)	Error message: "Invalid book information"	Error message: "Invalid book information"	Pass
Search Book	7	Valid book title or author	List of matching books	List of matching books	Pass

	8	Invalid book title or author	No matching books found	No matching books found	Pass
Request Book	9	User requests a book	Request submitted successfully	Request submitted successfully	Pass
	10	User requests a book that's not available	Error message: "Book not available for request"	Error message: "Book not available for request"	Pass
Issue Book	11	User requests an available book	Book issued successfully	Book issued successfully	Pass
	12	User requests a book that's already issued	Error message: "Book already issued"	Error message: "Book already issued"	Pass
Return Book	13	User returns an issued book	Book returned successfully	Book returned successfully	Pass
	14	User returns a book that's not issued	Error message: "Book not issued to the user"	Error message: "Book not issued to the user"	Pass
View User Data	15	Admin views user data	User data displayed	User data displayed	Pass
View Book Data	16	Admin views book data	Book data displayed	Book data displayed	Pass

b. DEMO VIDEO

Video Link:

YouTube : <https://www.youtube.com/watch?v=TRiN8ryT1bs>

Google Drive :

https://drive.google.com/file/d/1ARa_VeQjKZbxzCeip8DTEDJUtLks6kES/view?usp=sharing

GIT Hub Link for all code files :

Link: <https://github.com/ShelkeAkshay-2022mt93331/DATABASE-DESIGN-AND-APPLICATIONS>

c. references:

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2. Bind, P. S., & Suradkar, S. S. (2019). Library Management System. Pearson.
3. Healey, D. (2008). Best Practices in Library Management Systems. Journal of Academic Librarianship, 34(6), 520-526.
4. Chen, P. P. (1976). The Entity-Relationship Model - Toward a Unified View of Data. ACM Transactions on Database Systems, 1(1), 9-36.
5. Elmasri, R., & Navathe, S. B. (2016). Fundamentals of Database Systems (7th ed.). Pearson.

d. Google Drive Link for all Deliverables:

[https://drive.google.com/drive/folders/14Y7oAMRhSacKphy7nwhFUXvYe_okZsAv?usp=drive link](https://drive.google.com/drive/folders/14Y7oAMRhSacKphy7nwhFUXvYe_okZsAv?usp=drive_link)